Prediction of Regolith Ejection During Extraterrestrial Landings

Completed Technology Project (2011 - 2015)

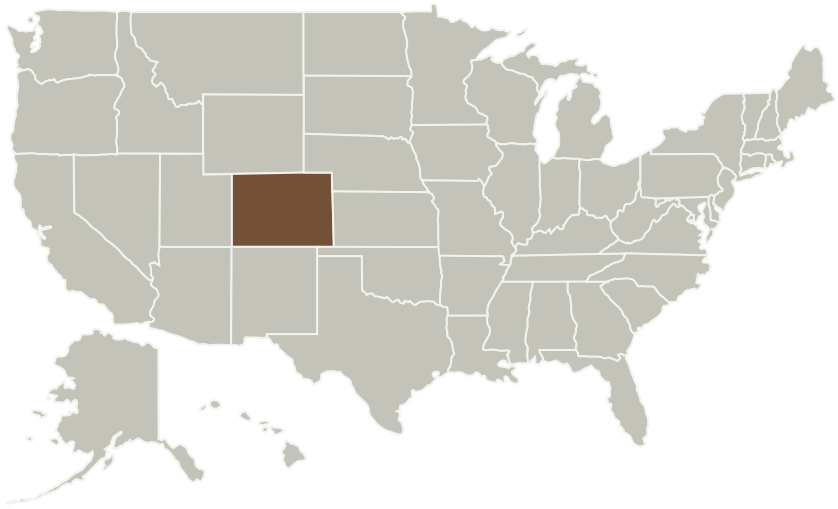
Project Introduction

The overall objective of the proposed work is to provide a better understanding of the transport of ejected lunar regolith during spacecraft landing on extraterrestrial bodies (Moon, Mars, asteroids, etc.) and to incorporate this knowledge into a first-principles model for wide particle size distributions. In order to develop this model, computer simulations using both the discrete element method and continuum theory, along with experimental data, will be used. This model will then be transferred to NASA engineers for use as a practical predictive tool in a variety of scenarios to assist in the design of systems to mitigate the effects of regolith ejection. Such a predictive tool is crucial for the safety and future of space exploration.

Anticipated Benefits

This model will then be transferred to NASA engineers for use as a practical predictive tool in a variety of scenarios to assist in the design of systems to mitigate the effects of regolith ejection. Such a predictive tool is crucial for the safety and future of space exploration.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
University of Colorado Boulder	Supporting Organization	Academia	Boulder, Colorado

Project Image Prediction of Regolith Ejection During Extraterrestrial Landings

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Responsible Program:

Space Technology Research Grants

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Primary U.S. Work Locations

Colorado

Images

4235-1363263302065.jpg
Project Image Prediction of Regolith Ejection During Extraterrestrial Landings
(https://techport.nasa.gov/image/1811)

Project Website:

https://www.nasa.gov/directorates/spacetech/home/index.html

Project Management

Program Director:
Claudia M Meyer

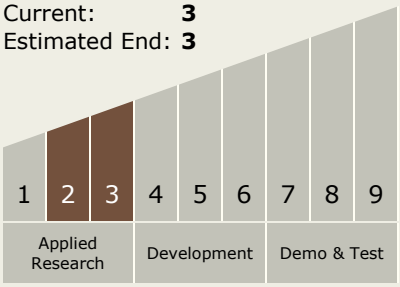
Program Manager:
Hung D Nguyen

Principal Investigator:
Christine Hrenya

Co-Investigator:
Kyle Berger

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
  - TX09.4 Vehicle Systems
    - TX09.4.5 Modeling and Simulation for EDL